

Claims

What Is Claimed Is:

1. A pharmaceutical composition comprising:
5
a therapeutically effective amount of a drug;
a solubilizer; and
10 a release modulator;
wherein the release of the drug and solubilizer are synchronized.
2. The pharmaceutical composition of Claim 1, wherein the drug is
15 pioglitazone, zafirlukast, simivastatin, atorvastin or fenofibrate.
3. The pharmaceutical composition of Claim 1, wherein the solubilizer is
a polyoxyethylene-polyoxypropylene block copolymer, a cyclodextrin or cyclodextrin
derivative, a fatty acid or fatty acid derivative, a tocopherol derivative or mixtures thereof.
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4. The pharmaceutical composition of Claim 3, wherein the tocopherol
derivative is a α -tocopherol ester, a polyethoxylated α -tocopherol ester or mixtures
thereof.
- 25 5. The pharmaceutical composition of Claim 3, wherein the tocopherol
derivative is α -tocopherol, α -tocopherol acetate, α -tocopherol nicotinate, α -
tocopherol succinate, α -tocopherol polyethyleneglycol (200-8000) succinate, α -
tocopherol polyethyleneglycol 400 succinate, α -tocopherol polyethylene glycol 1000
succinate, d- α -tocopherol polyethylene glycol 1000 succinate, dl- α -tocopherol
30 polyethylene glycol 1000 succinate or mixtures thereof.

6. The pharmaceutical composition of Claim 3, wherein the fatty acid derivative is an ester with glycerol, propylene glycol, sorbitol, sucrose, glucose, polyethylene glycol, an alpha-hydroxy acid or mixtures thereof.

5 7. The pharmaceutical composition of Claim 3, wherein the ester is a polyoxyl castor oil derivative, a PEG-8 caprylic/capric glyceride, a polysorbate, sorbitan monooleate, a medium chain mono-, di-, or triglyceride, a acetylated monoglyceride, a linoleoyl monoglyceride, a lauroyl macrogol-32 glyceride or mixtures thereof.

10 8. The pharmaceutical composition of Claim 1, wherein the release modulator is an osmotic pump, a slowly dissolving salt of a complex, an erodible matrix, an ion exchange resin, a wax, an insoluble carrier, a polymeric matrix, a polymeric coating, a fatty alcohol, a fatty alcohol derivative, fatty acid or fatty acid
15 derivative, a tocol derivative or mixtures thereof.

9. The pharmaceutical composition of Claim 8, wherein the release modulator is a polymeric matrix, a polymeric coating, a wax, a fatty alcohol, a fatty alcohol derivative, a fatty acid or fatty acid derivative, a tocol derivative or mixtures
20 thereof.

10. The pharmaceutical composition of Claim 9, wherein the polymeric matrix or polymeric coating is a cellulose derivative, an acrylic polymer, a polyvinylpyrrolidone copolymer, a shellac, polyvinyl acetyl phthalate, a high
25 molecular weight polysaccharide gum or mixtures thereof.

11. The pharmaceutical composition of Claim 9, wherein the tocol derivative is α -tocopherol, α -tocopherol acetate, α -tocopherol nicotinoate, α -tocopherol succinate, α -tocopherol polyethyleneglycol succinate, α -tocopherol
30 polyethylene glycol 400 succinate or mixtures thereof.

12. The pharmaceutical composition of Claim 8, wherein the release modulator is hydrogenated vegetable oil, glycerol dibehenate, glycerol distearate,

glycerol dipalmitate, glycerol palmitostearate, lauroyl macrogol-32 glyceride, stearyl macrogol-32 glyceride, calcium steroyl lactylate, stearic acid, stearyl alcohol, sucrose distearate, sucrose palmitate, sucrose dipalmitate, yellow wax, white wax, nonionic emulsifying wax, carnauba wax, microcrystalline wax, cetyl ester wax or
5 mixtures thereof.

13. The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is less than about 100 µg/ml.

10 14. The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is less than about 50 µg/ml.

15 15. The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is less than about 25 µg/ml.

16. The pharmaceutical composition of Claim 1, wherein the release is over an extended period of time.

20 17. The pharmaceutical composition of Claim 1, wherein the period of time is more than about 1 hour.

18. The pharmaceutical composition of Claim 1, wherein the period of time is more than about 2 hours.

25 19. The pharmaceutical composition of Claim 1, wherein the period of time is between about 2 hours and about 24 hours.

30 20. The pharmaceutical composition of Claim 1, wherein the solubilizer increases the solubility of the drug by at least 25% in comparison to the intrinsic aqueous solubility of the drug.

21. The pharmaceutical composition of Claim 1, wherein the release of the drug and solubilizer are synchronized with a correlation coefficient of greater than 0.80.
- 5 22. The pharmaceutical composition of Claim 1, wherein the release of the drug and solubilizer are synchronized with a correlation coefficient of greater than 0.90.
- 10 23. The pharmaceutical composition of Claim 1, wherein the release of the drug and solubilizer are synchronized with a correlation coefficient of greater than 0.95.
- 15 24. The pharmaceutical composition of Claim 1 including one or more additives.
- 20 25. The pharmaceutical composition of Claim 1, wherein the solubilizer is d- α -tocopherol polyethylene glycol 1000 succinate or polyoxyl 40 hydrogenated castor oil and the release modulator is α -tocopherol succinate, glycerol dibehenate or hydroxypropylmethylcellulose.
- 25 26. The pharmaceutical composition of Claim 25, including one or more additives.
27. The pharmaceutical composition of Claim 26, wherein the solubilizer is d- α -tocopherol polyethylene glycol 1000 succinate, the release modulator is α -tocopherol succinate and the additive is polyethylene glycol.
- 30 28. The pharmaceutical composition of Claim 26, wherein the solubilizer is polyoxyl 40 hydrogenated castor oil and the release modulator is hydroxypropylmethylcellulose.
29. The pharmaceutical composition of Claim 1, wherein the aqueous solubility of the drug is dependent on pH.

30. The pharmaceutical composition of Claim 29, wherein the drug has a pK_a of less than or equal to about 9.0.

5 31. The pharmaceutical composition of Claim 30, wherein the drug is carvedilol, amiodarone, dronedarone, risperidone or ziprasidone.

32. A oral dosage form comprising:

10 a therapeutically effective amount of a drug;

 a solubilizer; and

 a release modulator;

15 wherein the release of the drug and solubilizer are
synchronized.

33. A solid oral dosage form comprising:

20 a therapeutically effective amount of a drug;

 a solubilizer; and

25 a release modulator;

 wherein the release of the drug and solubilizer are synchronized.